

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT
GULF OF MEXICO REGION

ACCIDENT INVESTIGATION REPORT

For Public Release

1. OCCURRED

DATE: 03-DEC-2021 TIME: 1300 HOURS

2. OPERATOR: Anadarko Petroleum Corporation

REPRESENTATIVE:

TELEPHONE:

CONTRACTOR: Diamond Offshore Drilling, Inc.

REPRESENTATIVE:

TELEPHONE:

- STRUCTURAL DAMAGE
- CRANE
- OTHER LIFTING
- DAMAGED/DISABLED SAFETY SYS.
- INCIDENT >\$25K
- H2S/15MIN./20PPM
- REQUIRED MUSTER
- SHUTDOWN FROM GAS RELEASE
- OTHER

3. OPERATOR/CONTRACTOR REPRESENTATIVE/SUPERVISOR ON SITE AT TIME OF INCIDENT:

4. LEASE: G35313

AREA: MC LATITUDE: 28.89333342

BLOCK: 82 LONGITUDE: -88.10404829

5. PLATFORM:

RIG NAME: DIAMOND OCEAN BLACKHAWK

6. ACTIVITY:

- EXPLORATION(POE)
- DEVELOPMENT/PRODUCTION (DOCD/POD)

7. TYPE:

INJURIES:

HISTORIC INJURY

OPERATOR CONTRACTOR

REQUIRED EVACUATION

LTA (1-3 days)

LTA (>3 days)

RW/JT (1-3 days)

RW/JT (>3 days)

FATALITY

Other Injury

POLLUTION

FIRE

EXPLOSION

LWC HISTORIC BLOWOUT

UNDERGROUND

SURFACE

DEVERTER

SURFACE EQUIPMENT FAILURE OR PROCEDURES

COLLISION HISTORIC >\$25K <=\$25K

8. OPERATION:

- PRODUCTION
- DRILLING
- WORKOVER
- COMPLETION
- HELICOPTER
- MOTOR VESSEL
- PIPELINE SEGMENT NO.
- OTHER

9. CAUSE:

- EQUIPMENT FAILURE
- HUMAN ERROR
- EXTERNAL DAMAGE
- SLIP/TRIP/FALL
- WEATHER RELATED
- LEAK
- UPSET H2O TREATING
- OVERBOARD DRILLING FLUID
- OTHER _____

10. WATER DEPTH: 4294 FT.

11. DISTANCE FROM SHORE: 50 MI.

12. WIND DIRECTION: NW
SPEED: 3 M.P.H.

13. CURRENT DIRECTION: WNW
SPEED: 1 M.P.H.

14. SEA STATE: 0 FT.

15. PICTURES TAKEN:

16. STATEMENT TAKEN:

INCIDENT SUMMARY:

On December 3, 2021, at approximately 13:00 hours, Anadarko Petroleum Corporation (Anadarko) had a dropped objects incident on the Diamond Ocean Blackhawk (the Blackhawk) drillship at Mississippi Canyon (MC) 82, Lease OCS-G 05313 (MC 126, Lease OCS-G 18194 bottom hole) during drilling operations. The incident involved the riser elevation crane dropping one end of the riser into the riser holding area. Anadarko reported the incident to the Bureau of Safety and Environmental Enforcement (BSEE), New Orleans District.

SEQUENCE OF EVENTS:

On December 3, 2021, the Blackhawk morning rig crew successfully ran 34 joints of riser from the riser hold into the sea. The riser elevation crane performed these operations (which includes latching onto the riser joints in the riser hold) without issue until approximately 1100 hours when the crane started having difficulty latching (squarely) onto the joints.

At approximately 1200 hours, the evening rig crew was using the riser elevation crane to raise a joint of riser from the riser hold to the transfer station on the riser cart deck. The elevation crane failed, allowing one end of the riser to fall, and come to rest in the riser hold area while damaging the aft (toward the back) stairway and handrail. As consequence to the failure of the elevation crane spreader bar separated from Forward and Aft shearing the bolts on the hook flange.

The Anadarko/Diamond Offshore Drilling (Diamond) investigation into this incident found the flow control valve and its associated roller had become worn and the switch was fully engaged at all times, indicating a complete latch regardless of hook position. When this valve failed, the crane operator did not get an indication of the failure.

BSEE INVESTIGATION:

The BSEE incident investigation consisted of communicating with the drilling and operating companies, and the HSE representative on location. BSEE requested daily reports, pictures, witness statements, work permits, and Diamond's procedures, and the investigator conducted an on-site investigation on December 22, 2021.

The following findings were identified during the BSEE investigation and after reviewing the Diamond Ocean Blackhawk Incident report:

The Blackhawk morning rig crew was using the elevation crane to move approximately 34 riser joints from the riser hold area. Based the morning crew's witness statements, between 11:00 hours to 12:00 hours, the riser elevation crane was having difficulty latching (squarely) onto the joints and needed to be reset multiple times during the morning rig crew work tour.

Diamond identified the riser elevation crane and riser capture device on the crane as designed to be operated by a single person without latch verification. However, when running riser from the riser hold, there is an automated system to elevate the riser joints from the riser hold to the riser cart, and then to the drill floor. The company learned through previous incidents that the automation can fail and additional barriers (i.e., personnel verification of equipment working as designed) should be in place to conduct these operations.

Diamond also provided information that National Oilwell Varco (NOV) had previously issued a Public Information Bulletin (PIB) in 2017 addressing "capture devices" not

fully engaging and ensuring an "over-center" cylinder position is obtained by the piston. Diamond and the Blackhawk addressed this PIB at the time and when the latch was fully engaged, an over-center measurement of 8.5 mm was verified. If the latch is not fully engaged, it will not move a hydraulic flow control valve to allow the system to pick up weight.

At approximately 1200 hours, Diamond reports the morning rig crew handover occurred and started the riser move operation using the same elevation crane. The dropped riser joint was the first joint moved by the evening crew but the 35th joint moved during the day.

According to Diamond incident report, the crane has a hydraulic control valve designed to indicate to a proper latch has been made and it is safe to lift the riser. Diamond found the elevation crane hydraulic flow control valve and its associated roller had become worn, and the switch was always engaged, indicating a complete latch regardless of hook position. Therefore, if an individual did not recognize this failed/sticky valve, and the switch was stuck and always engaged, the system would allow for the riser to be lifted without proper engagement of the capture devices. Diamond identified the crane's hydraulic flow control valve as a single point of failure for this incident.

The report also states the evening crewmember designated as the flagger and new to the position and with no prior experience completing this task. He was assigned on the end of the riser (which fell), but he was not made aware he was to conduct latch verification, or that there were black indication marks on the hook to show whether a full latch has occurred.

CONCLUSIONS:

The BSEE investigator makes the following conclusions based on observations made and evidence obtained during the investigation:

1. The hydraulic control valve failed (stuck) showing a constant latch allowing the crane operator to pick up the riser joint when it was not latched and therefore safe to pick up.
2. The Site-Specific Procedure (SSP) and Job Safety Analysis (JSA) used for this operation did not cover all steps required to move riser.
3. The flagger involved in the task was not properly trained and did not know what verification steps were necessary.

18. LIST THE PROBABLE CAUSE(S) OF ACCIDENT:

1. Engineering/Design Inadequate - The hydraulic control valve failed (stuck) showing a constant latch allowing the crane operator to pick up the riser joint when it was not latched and therefore safe to pick up. The riser elevation crane and riser capture device on the crane is designed to be run by a single person with no latch verification. The hydraulic flow control valve is designed to indicate to the crane operator a proper latch has been made and that it is safe to lift the riser. The crane operator did not get an indication of the failure which led to the crane being able to lift the riser when it was not safe.

19. LIST THE CONTRIBUTING CAUSE(S) OF ACCIDENT:

1. The Site-Specific Procedure (SSP) being used during this operation did not encompass the activities/steps required to move the riser from the riser hold to the riser cart.
2. The JSA did not cover the hazards associated with moving the riser from the hold to the cart.

20. LIST THE ADDITIONAL INFORMATION:

The Diamond investigation also found that even if the flagger was trained, the capture device hook black indicators was not a reliable way of demonstrating a proper latch. The difference between a good latch and one that was not complete would not be easy to detect by a person; and should not be a barrier in preventing an improper latch. Diamond's follow-up action is to identify a new way of visualizing riser capture devices are fully engaged.

21. PROPERTY DAMAGED: NATURE OF DAMAGE:

riser elevation crane, stairway, and handrails

ESTIMATED AMOUNT (TOTAL): \$250,000

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

The BSEE New Orleans District office makes no recommendations at this time.

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: NO

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

25. DATE OF ONSITE INVESTIGATION:

22-DEC-2021

28. ACCIDENT CLASSIFICATION:

29. ACCIDENT INVESTIGATION

26. INVESTIGATION TEAM MEMBERS:

Frank Musacchia

PANEL FORMED: NO

OCS REPORT:

27. OPERATOR REPORT ON FILE:

30. DISTRICT SUPERVISOR:

David Trocquet

APPROVED

DATE:

09-AUG-2021